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Government of Canada
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MSAT

An opportunity for Canada

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COMMUNICATIONS

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News Release

Communiqué

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COMMUNICATIONS

MARCH 20, 1985

FOR IMMEDIATE RELEASE

DOC Minister supports mobile satellite system for Canada

OTTAWA -- Communications Minister Marcel Masse today announced federal government support for the implementation of a commercial mobile communications satellite (MSAT) system for Canada by 1990. The program is to be undertaken in cooperation with the United States, as an industry-led joint endeavour involving NASA, DOC, Telesat Canada and a U.S. satellite operator.

Canadian government support is subject to satisfactory negotiation of cooperative business arrangements by the private sector, and to final funding approval later this year for the level of federal government participation in the program. The MSAT system is intended to meet a demonstrated need for improved voice and data communications to vehicles, aircraft, ships and other portable stations for a wide variety of business applications in rural and remote areas of Canada.

In Canada, a lead role is being assumed by Telesat Canada and the program will involve a large number of Canadian companies concerned with retailing MSAT services and the manufacture of satellites and ground terminals.

"I understand Telesat is proceeding with the negotiation of cooperative business arrangements with Canadian and U.S. entities," Mr. Masse said. "Canada must now move quickly to ensure cooperative benefits and to negotiate satisfactory radio frequency spectrum sharing with the U.S." The Minister went on to mention that Canada stands to benefit significantly through cooperative agreements with the U.S. for joint satellite procurement and service back-up arrangements, which would avoid the need for a spare spacecraft for each country.

News Release

Communiqué

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"Telesat Canada has submitted a comprehensive business proposal to my department for the establishment of a commercial mobile satellite system and financial support is being requested to limit the business risk to Telesat in such a large undertaking. However, this issue cannot be resolved until business arrangements are further developed and the effects of possible policy, regulatory and institutional changes are examined," Mr. Masse noted.

"I am confident that the private sector will seize this challenging business opportunity and will find a way to realize it with a level of government financial involvement that is appropriate to these difficult times," the Minister concluded.

Proposed government support includes sponsoring satellite and ground terminal development in industry and post-launch telecommunications trials to allow users to assess the new services. At present, the Department of Communications is considering 170 proposals for post-launch trials originating from business and government across Canada. If the trials are successful, this should result in some 20,000 system users.

Estimated use of MSAT is distributed as follows:

- Transport (17%) - trucking, railway, shipping, aviation, busing;
- Minerals, Oil, Gas (13%) - exploration, exploitation;
- Services (13%) - maintenance of hydro, telecom, pipelines, roads;
- Forestry (12%) - forest management, harvesting;
- Government (10%) - law enforcement, coast guard, ambulance, firefighting, fisheries, pollution monitoring, etc.
- Construction (5%) - large projects in remote areas;
- Others (30%) - agriculture, fishing, manufacturing, public communications.

The Department will proceed to explore a further cooperative agreement with NASA to provide a framework for mutual cooperation and technology development during the implementation and operations phases of MSAT.

During the coming months, the Department will also be providing support to Canadian industry for the further development of required satellite and ground terminal technologies.

The mobile satellite concept follows four years of comprehensive economic and technical definition studies by Canadian industry and expected investment from the private sector in Canada is over \$400 million.

Substantial economic benefits will accrue to Canada with the major beneficiaries being system users, service providers, Telesat Canada, satellite and terminal manufacturers and the government itself, the latter benefiting primarily through tax revenues.

Once the system is established, it is expected to generate over \$2.4 billion of total sales for Canadian manufacturing industry and service providers by the year 2000, and create 1600 continuing high technology jobs.

On August 31, 1984 the Department issued a public discussion paper on telecommunications policies for mobile satellite service. Public comment was received by January 7, 1985 and an announcement of adopted policies is expected this summer.

MSAT, which will ensure equality of access to basic mobile telephone and radio service for Canadians outside urban areas, is of strategic importance to the economic development of remote and rural areas of Canada and is a high priority for further development of Canada's telecommunications system.

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MSAT - AN ECONOMIC OPPORTUNITY FOR CANADA

The MSAT Program is aimed at supporting an initiative of Canadian industry to develop and establish a first-generation commercial mobile-satellite (MSAT) system and service for Canada by 1990. The MSAT system would be implemented by Telesat Canada to provide voice and data communications to vehicles, aircraft, ships and other portable stations located anywhere in Canada for a wide variety of applications such as resource exploration, trucking, railways, forestry, fisheries, construction, and law enforcement. The Department of Communications has recently completed four years of MSAT market and system studies and technology development in Canadian industry. Some of the highlights of these studies follow:

Commercial Viability: Telesat Canada concluded from its MSAT commercial viability study that:

- a) for the baseline market forecast, MSAT is commercially viable from the satellite operator viewpoint over two generations;
- b) the first-generation system is only marginally profitable, consequently there is a requirement to reduce Telesat's risk; and
- c) the preferred system approach for service introduction includes Canada/United States cooperative business arrangements.

Impact on Manufacturing Industry: Woods Gordon conducted a Phase B study of the export market potential of MSAT and of the impact on the manufacturing industry of both the domestic and export market. There is an immediate spacecraft and ground terminal export opportunity in the U.S. Woods Gordon also identified other possible export sales in the longer term. Projected MSAT sales by the manufacturing industry total almost \$1 billion (in 1984 constant dollars) for the first two generation systems.

Impact on Service Industry: MSAT will represent a major business opportunity for existing and new service providers in the retailing of MSAT services and leasing of MSAT terminals. The estimated total sales of this industry are \$540 million for the first-generation system and \$1.4 billion for the second-generation system in 1984 dollars. The results of several studies indicate that MSAT has the potential to be an economically viable business from the viewpoint of service providers.

Social Impact: Wescom Communications has reported from its study a large number of positive social impacts from MSAT, including: saving of lives; improved access to mobile communications for 6 million Canadians; improved worker safety, law enforcement, emergency medical care, disaster relief, search and rescue, traveller safety and protection to forest and the environment. Wescom has placed an economic value of approximately \$500 million in 1984 dollars on the social benefit of MSAT to Canada over the 14-year operating period of the first and second-generation MSAT.

User Benefits: MSAT will be used primarily by industries, government agencies, and small businesses needing mobile communications to improve the productivity and economic efficiency of their field operations and by the public for emergency communications. These economic efficiency benefits for the total MSAT users population are extremely significant and have been estimated in 1984 dollars to be in excess of \$500 million for the first-generation MSAT and \$1.5 billion for the second-generation MSAT assuming the baseline market forecast. These benefits will be diffused through the Canadian economy and will benefit all Canadians.

Overall Economic Benefits: Econanalysis Inc. performed a comprehensive independent analysis of MSAT over the period of the first and second-generation systems and concluded that the project is economically very attractive to Canada. Total benefits to Canada are estimated in excess of \$900 million discounted to 1984 dollars.

The net present value of the net economic benefits of MSAT to Canada are equal to the sum of the benefits to the project investors (Telesat, service providers and Canadian manufacturers) and to the non-investors (i.e., users of the services, the general public, and governments). These benefits are measured by the net present value of the benefits to each group after costs.

Job Creation: It is estimated that over the life-cycle period of two satellite systems, MSAT will generate approximately 1600 high technology jobs in the manufacturing industry and service industry sector.

fact sheet documentation

MSAT

What it is

MSAT stands for Mobile Satellite, a proposed new communications system that will bring two-way mobile service to all Canadians by using a satellite as a relay station in space.

The new system will allow someone using a relatively small and inexpensive radio terminal to communicate directly by satellite virtually anywhere in the country. While the greatest use of MSAT will probably be in land vehicles, the system will also be useful in planes, boats and field operations.

A commercial system

Telesat Canada is now developing plans to offer mobile satellite service on a commercial basis by the end of the decade. This could make Canada the first country in the world with a domestic mobile satellite communications system.

Under its business proposal, Telesat will own and operate the satellite, while retail marketing of MSAT service will generally be handled by the radio common carriers, telephone companies and new enterprises that will likely go into business as service providers.



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Canada

MSAT will not compete with cellular mobile systems. Rather, it will provide a complementary service in areas not served by existing or developing mobile systems.

What services will MSAT provide?

An estimated 80 per cent of system use will be for mobile radio and mobile telephone -- that is, for transmitting voice conversations. Data communications will be another important service.

Satellite mobile radio service will offer private communications between mobile units or between mobile units and a base station. Mobile radio users will likely have the option of owning or leasing their equipment.

- Police forces are expected to be a major user. Others include ambulance services, winter road maintenance crews and forest fire fighters.
- Resource industries, where people are constantly on the move in remote locations, need the range and universality MSAT can provide.
- Fishing fleets could use MSAT to get the latest reports on weather or sea conditions, to check shipping schedules and to exchange information about catches and fish locations.

Satellite mobile telephone service will provide two-way radio telephone communications between mobile units and the public telephone network or between mobile units. This service will appeal to mobile users such as sales personnel who need to be able to telephone their customers or home offices.

At present, mobile telephone service is available only in major cities, along highways connecting those cities and in some rural areas. MSAT mobile telephone service will be available everywhere in Canada, including coastal waters.

Satellite mobile data services will permit subscribers with mobile data units to call up information from a computer database for display on a small video screen or to enter and process information. Subscribers will be able to dial right into the computer without an intermediary, and data can be encoded to ensure confidentiality.

A police officer on patrol could check a vehicle's ownership this way. Resource exploration teams could report their findings and manage their logistics. Or a central office could check cargo loads and send inter-city dispatch instructions to trucks that would otherwise return home empty.

Data acquisition and control: MSAT will be able to collect data transmitted from remote monitoring and alarm devices and send commands to automated control stations.

For example, data from unmanned meteorological stations could be relayed by MSAT for use in weather forecasting. Hydrological data could be collected and distributed to government agencies responsible for hydro-electric projects or flood warnings.

Possible industrial applications include monitoring and control of pipelines, railways, power lines and oil wells.

Other services: One very important service that MSAT could provide is nationwide vehicle paging. Another possible MSAT offering is remote telephone service. Some 100,000 households in Canada do not have access to basic telephone service. MSAT could bring "thread of life" communications to these homes and to temporary or seasonal dwellings such as exploration camps and wilderness parks.

Estimating the Market

Outside the larger Canadian cities, more than half the present users of mobile communications have problems with inadequate range, noise, interference and distortion. Many others have no access to mobile services. These are potential customers for whom MSAT would provide clear communications with, for practical purposes, unlimited range.

It is expected that mobile radio would continue to be the type of service most in demand, followed by mobile telephone, data acquisition and control services and mobile data services. Conservative projections estimate market growth at 40,000 voice users alone by 1995, increasing to 80,000 voice users by the year 2000. (See attached chart on estimated number of satellite users.) Any data transmission requirements would be in addition to these voice channel requirements.

Opportunities

The MSAT program offers new and unique business opportunities to various industries as well as opportunities to end users.

Manufacturing industry: Since MSAT is a new concept, there is potential for substantial domestic and export sales totaling hundreds of millions of dollars for mobile radio, mobile telephone and data terminals, spacecraft and associated sub-systems, gateway and SHF or UHF base stations.

Service providers: The telephone companies, the radio common carriers and private enterprises can share with Telesat -- owner and operator of the satellite -- the challenge of providing mobile services to a range of users in all parts of Canada.

End users: Potential users of MSAT can greatly improve their efficiency and productivity by introducing reliable mobile communications services. The unique features of the MSAT system will provide opportunities for many new applications. Prospective MSAT users, service providers and manufacturers are encouraged to come up with new ideas for using MSAT and to discuss these with Telesat and the Department of Communications.

How will MSAT work?

The initial system planned by Telesat will use one satellite to provide service to all of Canada. On the ground, Telesat will have a central station to control the satellite and to manage the flow of communications through the MSAT system. There will be a number of gateway stations for connection to the public telephone network and several hundred base stations to funnel traffic to and from mobile radios. (See attached illustration of system concept).

Up to 35,000 mobile units will be able to use the first-generation system. Terminals will be about the same size as today's mobile units, with small roof-mounted antennas. There will also be terminals light enough for a person to carry into the bush.

Communication with mobile units will be in the 800 MHz band, while the up and down links between the satellite and gateway stations will be at 13 and 11 GHz.

Back-up for Canada's MSAT system is expected to be provided by a similar satellite serving the United States. MSAT in turn will provide back-up for the American system.

Benefits of MSAT

MSAT offers many social, economic and technological benefits.

Nationwide coverage: MSAT will extend mobile communications to all parts of the country, including the North and Canada's coastal waters. (See attached coverage diagram.) It will be of particular benefit to remote or sparsely populated areas with inadequate mobile service or no service at all.

Unlimited range: Today, about half the users of mobile communications have problems with inadequate range or dead spots outside the larger cities, and costs of improving or extending these services would be prohibitive. Because MSAT will relay calls by satellite, it will extend service-area coverage and provide long-range mobile communications.

High-quality communications: MSAT will provide clear and reliable signals. In isolated areas, MSAT customers will know they can always get through; this is far from certain with HF radio, now widely used for communications in the North and other remote areas.

Ease of use: The system will be completely automatic. When a mobile user wants to make a call, MSAT will automatically assign a channel, without the intervention of a central operator. No special skills will be needed to use MSAT.

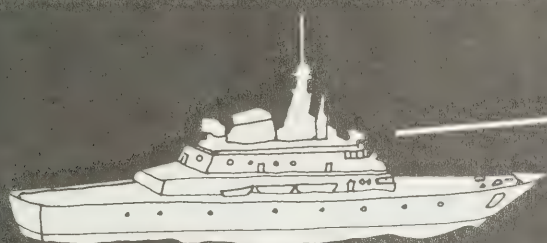
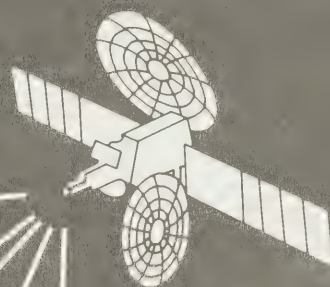
Economic benefits: In addition to the benefits it will bring government and private sector users, MSAT will mean new business opportunities for Canadian industry in domestic and export markets. It will also create jobs and lead to the development of new skills in Canada's labour force.

For more information about MSAT:

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NAVSTAR

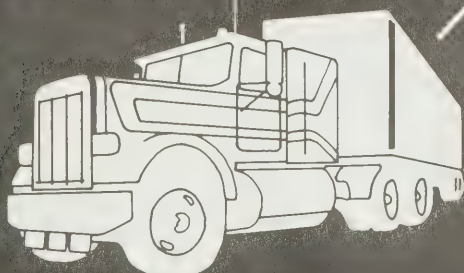
System Concept



Sea Mobiles



Base Station
or Portable
Field Station



Land Mobiles

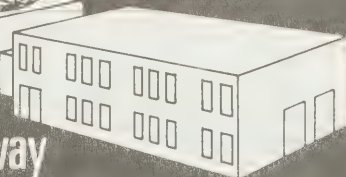


Central Control
Station

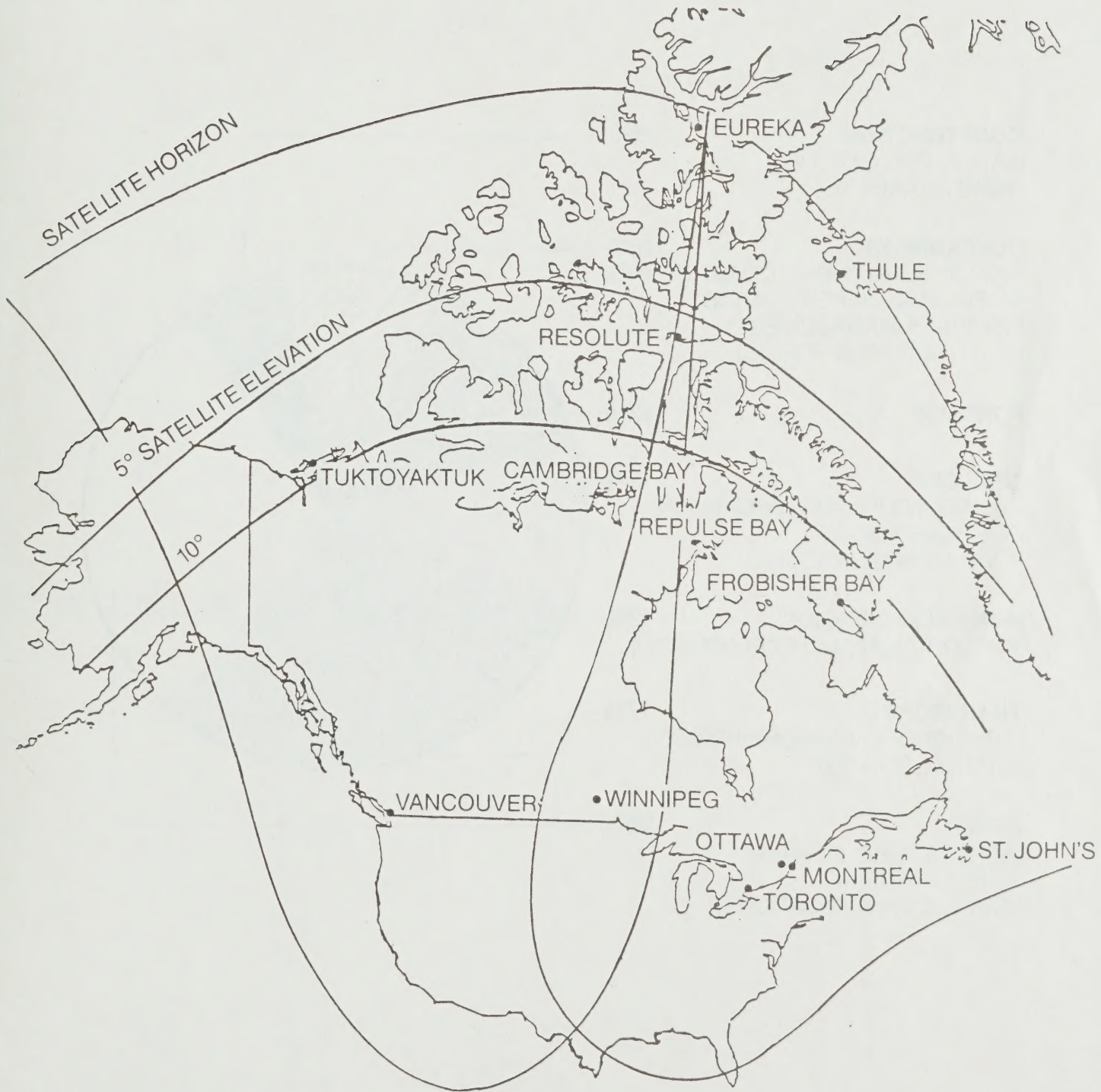


Gateway
Station

Telephone
Network



MSAT UHF COVERAGE



ESTIMATED MOBILE SATELLITE USERS : 80,000 BY YEAR 2000

CONSTRUCTION
(LARGE PROJECTS IN
REMOTE AREAS)

5%

GOVERNMENT
(LAW ENFORCEMENT, COAST GUARD,
AMBULANCE, FIRE FIGHTING,
FISHERIES MANAGEMENT,
POLLUTION MONITORING)

10%

FORESTRY

12%

SERVICES
(HYDRO, TELECOMMUNICATIONS,
PIPELINES AND
ROAD MAINTENANCE)

13%

MINERALS, OIL, GAS
(EXPLORATION AND EXPLOITATION)

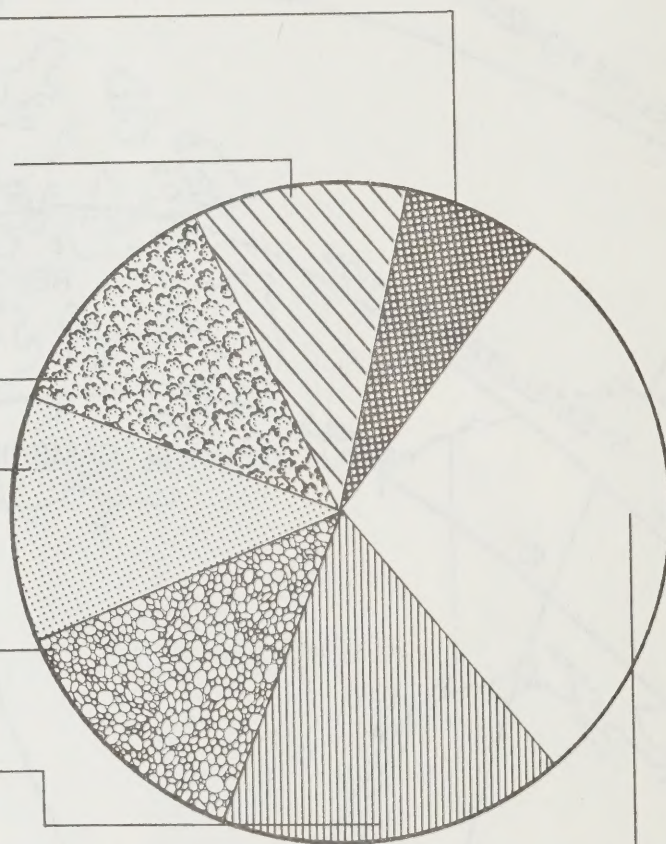
13%

TRANSPORT
(TRUCKING, RAILWAY, SHIPPING,
AVIATION, BUSING)

17%

OTHER
(AGRICULTURE, FISHING,
MANUFACTURING,
PUBLIC COMMUNICATIONS)

30%



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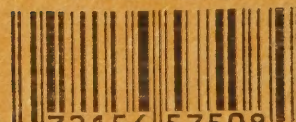


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